

REMARKS/ARGUMENTS

Reconsideration of the application is respectfully request for the following reasons:

Claims 1, 8, and 15 have been amended. Claims 2 and 18 have been deleted. No claims are added. Applicant has added the recitation “a first portion of a second dielectric layer on said first dielectric layer, and a second portion of said second dielectric layer on said first portion, wherein said first portion has a dielectric constant in the range of about 2.8 to 3.5 and a thickness that is less than about 10 angstroms, said second portion has a dielectric constant in the range of about 1.1 to 3, and a thickness that is thicker than said thickness of said first portion, and said first portion comprises carbon therein” to Claim 1; the recitation “said first portion has a dielectric constant in the range of about 2.8 to 3.5 and said second portion has a dielectric constant in the range of about 1.1 to 3” to Claim 8, and the recitation “in the range of about 1.1 to 3, and the thickness of said first portion is less than about 10 angstroms and which is less than the thickness of said second portion” to Claim 15. Because the limitations of Claims 2 and 18 have been added to Claims 1 and 15, Claims 2 and 18 are deleted. The above amendments are supported by the specification of the present application. Claims 1, 3-17 remain pending.

Applicants respectfully request reconsideration in light of the above amendments and the following remarks.

CLAIM REJECTION - 35 U.S.C. § 102

Claims 1-3, 6-9, and 13-18 stand rejected under 35 U.S.C 102(b) as being anticipated by Uglow (US 6,251,770).

The rejection of Claims 2 and 18 is moot, because Claims 2 and 18 have been deleted.

This rejection is respectfully traversed on the basis that Uglow '770 does not disclose that "said first portion has a dielectric constant in the range of about 2.8 to 3.5 and a thickness less than about 10 angstroms, and said second portion has a dielectric constant in the range of 1.1 to 3 and a thickness thicker than said thickness of said first portion" as recited in amended Claim 1, or "said first portion has a dielectric constant in the range of about 2.8 to 3.5 and said second portion has a dielectric constant in the range of about 1.1 to 3" as recited in amended Claim 8, or "said first portion has a dielectric constant in the range of about 2.8 to 3.5 and higher than a dielectric constant of said second portion which is in the range of about 1.1 to 3, and the thickness of said first portion is less than about 10 angstroms which is less than the thickness of said second portion" as recited in amended Claim 15.

Uglow '770 discloses a dual-damascene structure which includes a substrate, a barrier layer formed on the substrate, and a chemical vapor deposited dielectric layer formed over the barrier layer. The barrier layer is configured to function as a selective etch stop, and preferably includes silicon nitride (SiN) or silicon carbide (SiC) (col. 4, lines 40-43). **The barrier layer has a dielectric constant levels as high as about 9 (col. 1, lines 60-62). The chemical vapor deposited dielectric layer has a dielectric constant less than about 3.**

In contrast, the claimed invention requires that the second dielectric layer have a first portion and a second portion, wherein **"the first portion has a dielectric constant in the range of about 2.8 to 3.5"**, and **"the second portion has a dielectric constant in the range of about 1.1 to 3"**, that is to say, the first portion has a higher dielectric constant than the second portion. However, Uglow '770 discloses that the chemical vapor deposited dielectric layer has a dielectric constant less than about 3. **Uglow '770 does not disclose the claimed structure in which the "first portion has a dielectric constant in the range of about 2.8 to 3.5" as recited in Claims 1, 8, and 15.**

In addition, the thickness is also different between the claimed invention and Uglow '770. In the claimed invention, **"the thickness of the first portion is less than about 10 angstroms", and the thickness of the second portion is thicker than the first portion.** In contrast, Uglow '770 discloses that the **chemical vapor deposited dielectric layer grows to a thickness (TT)**

that will provide for a subsequently etch via hole. According to the disclosure of Uglow '770, the trench thickness is about 4500 angstroms. Although the present application does not specify that the thickness of the inventive second dielectric layer is suitable for an etch via hole, the prior art discussed in the present application teaches that **the second dielectric layer is used for the inter-level dielectric (ILD), which has a thickness between 130 nm and 100 nm (with a dielectric constant between 2.2 and 2.9)** (page 1, lines 25-27). Thus, Uglow '770 discloses the thickness of the chemical vapor deposited dielectric layer that is thicker than the second dielectric layer of the claimed invention. Thus, Uglow '770 does not anticipate or render obvious the claimed invention.

CLAIM REJECTION - 35 U.S.C. § 103

Claims 4-5 and 10-11 stand rejected under 35 U.S.C 102(b) as being unpatentable over Uglow (U.S. Patent No. 6,251,770) in view of Lee et al (U.S. Patent No. 6,663,973).

This rejection is respectfully traversed on the basis that the references singly or in combination do not teach or suggest the above highlighted limitations of Claims 1, 8 and 15, as discussed above with respect to Uglow '770. Although Lee et al '973 discloses that "the plasma variables used to control the physical and chemical nature of the deposited polymer film are recitation power in Watt,...(col. 16, lines 4-13), and "under the same flow rate, increasing power level resulted in thin film of higher dielectric constants,... (col. 16, lines 17-21), the Examiner's combination of Uglow '770 and Lee et al '973 fails to teach that **"said first portion has a dielectric constant in the range of about 2.8 to 3.5 and the thickness less than about 10 angstroms, and said second portion has a dielectric constant in the range of 1.1 to 3 and a thickness that is thicker than said thickness of said first portion"** as recited in amended Claim 1, or **"said first portion has a dielectric constant in the range of about 2.8 to 3.5 and said second portion has a dielectric constant in the range of about 1.1 to 3"** as recited in amended Claim 8. Thus, the Examiner's combination of Uglow '770 and Lee et al '973 does not render the claimed invention obvious.

CONCLUSION

In light of the above amendments and remarks, Applicant respectfully submits that all pending Claims 1, 3-7, and 8-17 as currently presented are in condition for allowance. Applicant has thoroughly reviewed the art cited but not relied upon by the Examiner. Applicant has concluded that these references do not affect the patentability of the claims as currently presented. Accordingly, reconsideration and allowance are respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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